

THE EUGENICS REVIEW

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PERIODICALS

Annals of Eugenics

April 1941, Vol. 11, part I.—*Average excess and average effect of a gene substitution.*—By R. A. Fisher.—The average effect of a gene substitution on a quantitative character is defined. It is shown that its value need not be the same as the mean excess for the gene of the measurement in the three genotypes, except for a population which has for long been mating randomly. This situation is discussed in relation to Wright's views on selection and a numerical example illustrates the incompleteness of Wright's theory.

Discriminant analysis of Tocher's eye-colour data for Scottish children.—By Khint Maung.—The Pigmentation Survey of Scottish school children carried out about thirty-five years ago provided masses of data for the analysis of which the statistical methods then current were quite inadequate. Recent developments allow the construction of a numerical index to represent descriptive classifications such as those of hair or eye colour. In this paper the eye colour index is analysed and the geographical distribution of the mean values of the index is discussed. There is a striking increase in the degree of pigmentation with increasing urbanization, but no indication of a sex difference in pigmentation.

Statistical analysis of black colour in Wessex Saddleback breed.—By T. M. Olbrycht.—Methods appropriate to the analysis of problems of heredity in man may usefully be applied also to many animal populations. A first examination of herd records of the occurrence of all-black pigs in litters from piebald parents showed total numbers in agreement with a single recessive factor segregation. Using an efficient scoring technique for individual litters of the type introduced by Fisher, it was possible to show that the segregations were actually heterogeneous, and probably an explanation in terms of polygenic inheritance must be sought. This technique should prove valuable to all concerned with human genetics and not merely to those whose interest lies in animal problems.

Data for testing for genetic linkage on 500 pairs of sibs.—By William C. Boyd and Lyle G. Boyd.—*The detection of linkage. II. Further mating types; scoring of Boyd's data.*—By D. J. Finney.—Boyd's collection of data from 200 Egyptian and Syrian families is a welcome addition to our knowledge of the genetic factors which he has examined. These are the blood groups, blood types, presence of mid-digital hair, P.T.C. reaction and also pigmentation gradings for hair, eye, and skin colour. Most of the records are of sibships only, but some have information on one or both parents. A large number of linkage tests by the method of sib-pairs has been made on this material, and little positive evidence for linkages was found. A number of

families conflict with the hypothesis of a simple dominant gene responsible for the presence of hair on the second middle phalanx, but no comment is made on this point.

Efficient linkage tests for the factors whose modes of inheritance are known are considered in the paper which follows, and it is shown that a substantial gain in information results from their use. Details are given for the use of such efficient methods in other linkage tests with the ABO blood groups.

D. J. FINNEY.

Archiv der Julius Klaus-Stiftung

1940, Vol. 15, Nos. 3-4.—*Untersuchungen über die Intelligenzentwicklung frühgeborener Kinder.*—By Bernhard Voegeli.—165 children born prematurely (with birth-weights of less than 2,500 grams—i.e. 5½ lb.) in the years 1924 to 1933 who had been inmates of the Cantonal Infants Home at Zürich were re-examined in the summer of 1937. 42.4 per cent of them had I.Q.s of 91 to 100, 24.2 per cent of 81 to 90, 19.4 per cent of 101 to 110. Those of the children whose fates were not influenced either by severe complications at the deliveries or by some unfavourable hereditary influence, regardless of their birth-weight class, developed intellectually within the normal limits.

Die Vierlingsgeschwister Gehri und ihr Verwandtschaftskreis.—By Otto Schlaginhausen.—The author, who is the director of the Anthropological Institute of Zürich University, describes his anthropological examination of two brothers and two sisters, born as quadruplets from four different ova in 1880. Among the descendants of their eight great-grand-parents there were seventeen pairs of twins who were examined statistically as to various traits.

Die Sprache und Stimme von ein- und zweieiigen Zwillingen in Beziehung zur Motorik und zum Erbcharakter.—By R. Luchsinger.—28 uni-ovular and 11 binovular pairs of twins were examined. The range of the voices (number of half-tones) was very similar in the uni-ovular twins, but quite different in the binovular ones. Stammering showing no characteristic difference, the author considers language to be a modification, not a hereditary trait. The inherited psychical basic functions (G. Pfahler) were concordant in the uni-ovular twins.

F. F. TIETZE.

Human Fertility

February 1941, Vol. 6, No. 1.—*The Comparative Spermicidal Powers of Fifteen Commercial Contraceptives.*—By Royal L. Brown and Clarence J. Gamble.—This is a continuation of the author's previous work on a

method of testing the spermicidal power of commercial contraceptives published in August 1940 and abstracted in the October 1940 issue of this REVIEW (p. 100). They have now tested a further thirteen products by the same method, including three of the products previously tested so that the earlier group of ten products might be brought into line with the new series. The authors draw up a table giving the ranking of these twenty-three commercial products according to spermicidal time. Certain of the products are bracketed together in small sub-groups, those within the same brackets having spermicidal times which are not significantly different from one another. What is of considerable interest to readers of the EUGENICS REVIEW is that Volpar Products head the list with a spermicidal time considerably shorter than any other product so far tested. The research leading up to the preparation of Volpar Products and their chemical composition were described in papers by J. R. Baker, R. M. Ranson and J. Tynen published in the EUGENICS REVIEW of January and April 1939.

As Brown and Gamble point out, the clinical efficiency of contraceptives is not necessarily in the same order as their spermicidal times as established by laboratory tests, and there is thus a need for further research into the practical effectiveness of chemical contraceptives. They also state that evidence is not available to prove that Volpar products (which contain phenyl mercuric acetate) are free from the danger of producing the cumulative toxic action associated with mercurial compounds. This is presumably true of America where Volpar has not as yet been used to any large extent, but in this country many hundreds of patients have now been under observation for periods up to four years while using Volpar products regularly without any signs or symptoms of cumulative mercurial poisoning having been reported. A small proportion of patients are sensitive to the chemicals contained in Volpar products and are therefore unable to use them; but this is true of many chemicals. It is hoped that some clinical results comparing various chemical contraceptives used at F.P.A. clinics will be published shortly.

Postpartum Sterilization.—By M. A. Brennecke.—A report on twenty-three cases operated on within one to six days following delivery, using the Madlener technique for sterilization. No complication occurred and there have been no pregnancies reported in the series for a period of two years following operation.

An Experiment in Temporary Immunization against Pregnancy.—By Endre K. Brunner.—This paper describes an attempt to verify the claim by Dr. I. Sugár of Budapest that it is possible to produce temporary sterility in rabbits by the injection of an antigen produced from bull sperm. Dr. Brunner obtained the material for injection direct from Dr. Sugár's laboratory. He kept and fed his rabbits under ideal conditions and carried out

the experiments with necessary controls. His conclusions are as follows: (1) Dr. Sugar's sperm antigen, contrary to his findings, did not produce immunity against pregnancy in rabbits. (2) The injection delayed the opening of the vagina in the female offspring. (3) Hermaphroditism of the young occurred in at least five cases. (4) The ratio of male to female offspring was 6 to 4.

His comments on these findings are worth quoting: "Having followed the same technique of injection, the same species of animal used by the original investigator and having obtained the material for the immunization directly from his own laboratory, our failure to find the same results must be explained either on the ground that breeding experiments require ideal conditions and possibly these were lacking in his own laboratory or else the material was not capable of producing immunity to pregnancy. Antigens as a rule if kept under refrigeration will maintain their potency for a considerably longer time than the six months which elapsed between the preparation of this antigen and its uses. Certainly deterioration should not have been so complete.

The delayed opening of the vagina in the first generation females born of injected mothers, the large number of male animals born, and the appearance of hermaphroditism might be accounted for if, as it seems likely, the material injected into the mothers was not an antigen but some androgenic substance."

MARGARET C. N. JACKSON.

Journal of Criminal Law and Criminology

September-October 1940, Vol. 31, No. 3.—In *Some Suggestions for Treating the Defective Delinquent* Joseph P. Andriola, probation officer at the Juvenile Court of Toledo, Ohio, proposes that psychiatric clinics should be provided at all criminal courts and that the examination of offenders should not depend upon the discretion of some court official but all persons brought before the court should be examined. When the clinic finds a person to be feeble-minded and the court finds him guilty of crime, he should be classified as a defective delinquent and instead of receiving a criminal sentence involving a fixed minimum time of incarceration he should be committed for life. The author considers that special institutions should be established for this type of offender but in the meantime he should be segregated in special units or wards set aside in penitentiaries so that he does not mingle with other prisoners. To examine every offender brought before a court would require a vast army of psychiatrists, and in this country, at any rate, would defeat its purpose as a large number of offenders would resent a psychological examination and refuse to co-operate with the examiner. In this country also public opinion and practical experience is opposed to the idea of

retaining defective delinquents in penal institutions. It seems likely, however, that everyone will agree with the author's proposal for continued study and research by qualified persons of the institutionalized defective delinquent.

In the same number Hans von Hentig, Professor of Law, State University, Boulder, Colo., presents some *Remarks on the Interaction of Perpetrator and Victim*. He considers that the bulk of the "perfect murder" victims is formed by four types, the depressive, the greedy of gain, the wanton, and the tormentor. He points out that in sex crimes the step from an accomplice to a victim is rather short. Some courts have referred to the victim of seduction, for instance, as a "quasi particeps criminis," and in American law all women participating in the crime of incest are regarded as accomplices if they are not forced or deceived. The author states that in most European laws, however, descendants under 18 years of age are not punishable. He points to the fact that the element of seduction emanates from many victims of sexual offenders and quotes Leppmann who found as a result of an extensive experience in the Berlin Criminal Courts a series of occurrences which cast light on the incredible depravity of many half-grown girls. Indeed, most of us who have been in constant touch with the criminal courts can recall cases where mere children attempted to perform the rôle of the seducer. Professor von Hentig considers that the felony of false pretences usually includes the co-operation of the victim. He states that confidence men hold that their victim must possess two virtues, he must have sufficient money and be willing to use dishonest methods of making money. "An honest man will not allow himself to be a party in any scheme in order to gain sudden riches. A man must have larceny in his mind to become a perfect victim."

November-December 1940, Vol. XXXI, No. 4.—An interesting study in *Recidivism and Intelligence* appears in this Journal by A. A. Hartman, psychologist, Diagnostic Depot, Joliet, in which the relationship between recidivism and intelligence is examined from the records of 4,188 native-born white convicts who were committed by courts to the Illinois State Penitentiary at Joliet from 1934 to 1939. Test-ratings of prisoners on standard psychological examinations were compared with verified criminal histories and a statistical analysis was made taking into account the factors of age and type of offence. Hartman found that the average intelligence rating of recidivists is significantly above that of first offenders; differences between the two groups are found at all levels of the intellectual scale, the recidivists show a greater proportion of superior and very superior individuals and fewer at the retarded levels (dull and borderline), the proportion of mental defectives in the two groups, however, is practically the same; the differences in intelligence between recidivists and first offenders appear to be independent of age;

recidivists show higher average intelligence ratings in all of the offence categories except sex, the most marked differentiation is found in robbery and larceny cases; with the first offender group, those with records of previous arrests or misdemeanours tend to be lower in intelligence than those with no record whatever; the data on the basis of other quantitative and sociological criteria of habitual criminality tends to confirm the conclusion that recidivists are of higher intelligence than first offenders. There are no large scale data in this country for comparison with Hartman's conclusions. The author does not state to what extent the recidivist prison population in America is effected by the withdrawal from circulation of the mentally defective element, but for many years a number of delinquent defectives have been annually withdrawn from the prisons in England and Wales by certification under the Mental Deficiency Acts. For example, in 1938 the total of remand and convicted mentally defective offenders received into prison was 273, and as defectives tend to repeat their offences it is evident that their transfer to institutions for defectives has a marked effect in raising the average intelligence level of the recidivist population. The author's instructive figures suggest that the cause of recidivism must be looked for in other directions than defective intelligence. There can be no doubt that the affective and conative attributes of the personality are of the utmost importance in determining the persistence of criminality.

William B. Tucker, of the Frank Billings Medical Clinic, University of Chicago, considers the work of various writers in a paper entitled *Is there Evidence of a Physical Basis for Criminal Behaviour?* He considers that an unbiased estimate of the available evidence indicates that there is at least some physical basis for criminal behaviour, however small it may be. He states that "research in criminology, as in biology, medicine, and even psychology and sociology, must be guided by the knowledge that man is first an hereditary organic whole, and secondarily influenced by his environment. The age-old 'heredity versus environment' argument is no longer entirely valid, for the versus gives way, in compromise, to the probability that both factors are potent. The assessment of the relative importance of either in criminology must wait further joint bio-sociological research." Perhaps some general light is thrown upon the subject by the fact that crime in adolescents differs in quantity as well as in quality from crime in adults. In the Criminal Statistics for England and Wales in 1938 it was shown that the crime rate per 1,000 boys aged 14 to 16 was 11, among boys of 17 to 18 it was 8, among youths of 19 it was 7.7, among young men aged 21 to 25 it was 5.5. It progressively decreased until it was only 1.1 per 1,000 among men aged 40 to 50. If it is accepted that personality takes time to reach its full development we may perhaps be led to consider that in a majority

of cases as one gets older personality is a more important criminogenic factor than environment.

W. NORWOOD EAST.

Journal of Genetics

January 1941, Vol. 41, Nos. 1 and 2.—*The Partial sex-linkage of recessive spastic paraplegia.*—By J. B. S. Haldane.—This paper describes a particular case of a phenomenon in human genetics reported earlier: viz. "partial sex-linkage," due to crossing-over (it is supposed) between parts of the X and Y chromosomes. In such cases the pedigrees at first appear to be those of autosomal genes; they differ from them in that if a man receives a gene of this kind from his father he hands it on to most of his sons, but to few of his daughters, if from his mother the opposite holds. Haldane, using the data of Bell (*Treas. Hum. Inher.*, 4, 1939), shows that recessive spastic paraplegia is due to a partially sex-linked gene, and that this gene probably has three or more allelomorphs which determine different ages of onset. Genes of this kind are also probably responsible for some cases of Friedreich's ataxia and spastic ataxia. On the other hand, dominant spastic paraplegia is due to an autosomal gene.

The relative importance of principal and modifying genes in determining some human diseases.—By J. B. S. Haldane.—If the genetical basis of a disease is known three types of factor affecting the age of onset of the disease can be studied: (1) differences in the main gene determining the disease; (2) differences in modifying genes, i.e. genes which only act in the presence of a main gene; (3) differences in environment. Using data provided by the work of Bell, Haldane shows that in glaucoma, peroneal atrophy, Friedreich's ataxia, spastic ataxia and spastic paraplegia differences in age of onset are probably due to the existence of a number of main, allelomorphic genes: this is shown by the fact that in all affected members of a pedigree the age of onset is about the same, while wide differences appear in different pedigrees. But in optic atrophy and Huntington's chorea differences within a pedigree are almost as great as those between different pedigrees: here only one main gene may be involved, modifying genes being responsible for the differences in age of onset. The conditions in these two diseases are in accord with Fisher's theory of the evolution of dominance by the selection of modifier genes, but "a great deal more work will be required before we can judge whether the presence of modifiers in accordance with Fisher's theory is common or rare in the human species."

Variation and selection of polygenic characters.—By K. Mather.—This investigation deals with the quantitative or metrical type of heritable variation, which does not permit the separation of individuals into distinct types. The author calls this type of variation *polygenic*, by comparison with the monogenic or digenic type usually studied by geneticists;

he points out that the polygenic type of variation is the more important in applied genetics, and in the study of the origin of species. With the object of studying such variation in *Drosophila melanogaster* he subjected certain stocks to controlled selection; these stocks show variation in respect of the number of bristles on the ventral surfaces of the fourth and fifth abdominal segments, the number usually lying between 30 and 50; the variation is continuous. In one cross, selection was carried out from the F₂ generation; an advance was observed for two generations, followed by a period of stability; this was followed by a further, larger advance. The latter is considered to be due to the action of selection on variation released by a recombination of genes on the same chromosome; such a release of variation implies the existence of balanced polygenic combinations. The author points out that balanced polygenes may be expected to develop as a result of the action of natural selection: they constitute a compromise between the immediate advantages of stability on the one hand, and the long-term advantages of variability on the other. They will only be expected to arise in connection with naturally variable characters, and not in connection with the modification of the expression of comparatively rare mutants; this hypothesis is supported by previous work on the effects of selection. The relation of polygenes to phenomena such as polymorphism, and the clines studied by Huxley, is discussed.

C. D.

Milbank Memorial Fund Quarterly

April 1941, Vol. 19, No. 2.—In *Pre-war Population Policies* G. F. McCleary brings together a concise description of the salient features of the population programmes of Belgium, France, Germany, Italy and Sweden. The study is based on the work of Glass, Myrdal, Spengler, Burgdörfer and others. Dr. McCleary reminds us that laws to encourage marriage and to increase fertility were enacted by Augustus Caesar but failed to achieve their object. In modern times the family allowance system in France and Belgium probably failed because the inducements offered were not high enough. The Swedish system, which is based on freedom of choice and does not seek to prevent contraception and abortion, has not yet been long enough in operation for its effect on fertility to be evident. The Italian and German systems are comparable in that they penalize bachelorhood, contraception and abortion. Malthus declared that "Positive laws to encourage marriage and population, enacted on the urgency of the occasion, and not mixed with religion, as in China and some other countries, are seldom calculated to answer the end which they aim at." But the policies of France, Italy and Germany all urge the importance to the State of a rising birth-rate; in Germany alone has there been an increase in births—from 15.1 in 1932 to 20.3 per thousand in 1939.

Intra-Group Differences in Birth-Rates of Married Women.—By Clyde V. Kiser.—This study is based on material collected by the National Health Survey in 1935 and 1936; the birth-rates are first considered in relation to the proportionate importance of the various classes and are grouped according to the usual occupation of the husband, the educational attainments of the wife and by family income. In all three groups native white wives stand in the most favourable and coloured wives in the least favourable position. Among both native and foreign whites the birth-rates for the unskilled, the under 7th grade education and the "under \$1,000 and total relief" groups comprised one-third of the sample. Ninety per cent of the coloured women fall into the labouring classes and there is no appreciable difference between the birth-rates for skilled and unskilled workers. Consideration is then given to the character of variations in fertility *within* classes and the implications regarding the relative importance of

specific factors on variations in human fertility; these questions are studied in detail and are illustrated by diagrams and tables. The author emphasizes the need for further research into the factors underlying variations in human fertility; the high birth-rates of poor rural areas may be controlled by the spread of contraceptive knowledge, but the problem of a low birth-rate in cities rests on the interplay of social and psychological factors affecting family size.

In *Contraceptive Service in Three Areas* Regine K. Stix contrasts the types of patients attending clinics in New York, Cincinnati and Spartanburg, South Carolina, and discusses the factors underlying the differences in their uncontrolled fertility.

Gilbert W. Beebe in *Differential Fertility by Colour for Coal Miners in Logan County, West Virginia*, shows that in the sample studied the lower fertility of negroes cannot be attributed to contraception.

K. H.

C. B. C.

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